VALUE IN HEALTH 14 (2011) S122–S125

available at www.sciencedirect.com

SCIENCE DIRECT®

journal homepage: www.elsevier.com/locate/jval

Health Status and Health Behaviors in Venezuelan Pharmacy Students

*Yajaira M. Bastardo, PhD**

Facultad de Farmacia, Universidad Central de Venezuela, Caracas, Venezuela

ABSTRACT

Objectives: The goals of this study were to assess the self-reported health status of Venezuelan pharmacy students, and to examine the association between self-reported health status and health behaviors in these individuals. **Methods:** A random sample 171 of pharmacy students, ranging in age from 18 to 35 years were surveyed using a written questionnaire. Health status was assessed using the Medical Outcomes Study Health Survey Short-Form 36 (SF-36). The sample consisted of 127 women and 44 men. The sample had a mean age of 22.3 ± 2.71 years. The associations between health status and health behaviors were examined using both bivariate and multivariate models. The bivariate association was examined by *t* tests. Multiple regression analysis was used to model each SF-36 score separately using as independent variables sex, lack of regular exercise, regular smoking, and alcohol consumption. **Results:** The regression model explained between 6% and 12% of the variance in perceived health status. Controlling for other variables in the model, male students had significantly higher scores in bodily pain, general health, vitality, and social functioning than female students. Controlling for other variables in the model, lack of regular exercise was associated with significantly lower scores in physical functioning, bodily pain, and vitality; and regular smoking with significantly lower scores in physical functioning and general health. Controlling for other variables in the model, students who reported consuming alcohol had significantly higher scores in role-physical, bodily pain, and social functioning than students who did not report to consuming alcohol. **Conclusions:** This exploratory study demonstrates sex differences in health behaviors and perceived health status in pharmacy students. Health status is associated with several health behaviors in this sample of pharmacy students.

Keywords: health behaviors, health status, SF-36, pharmacy students, Venezuela.

Introduction

Perceived health is an integrated indicator of the subjective assessment of heath. Several demographic factors have been found to be associated with self-reported health status, including age, sex, and socioeconomic status [1–4], which suggest that it could be a good surrogate marker for individual health. A perception of poor health functioning is an independent predictor of loss of functional ability and mortality [5]. Many of the studies on the predictive value of self-reported health status have been limited to vulnerable populations, such as the elderly [5]. It is only recently that attention has been paid to relatively young and healthy populations, such as university students [6–9]. Years at university might be associated with considerable demands that could affect health and health status of individuals. While attending college, students face financial constraints, heavy study workloads, and adjustments to new social networks. In addition, during these years negative habits such as tobacco and alcohol consumption could be reinforced in this population. Although association between health behaviors and health status of university students has been reported in the literature, most of the studies are from developed countries; therefore, their findings are not necessarily applicable to Venezuela and other Latin American countries where students' services; living arrangements; and social, cultural, and political particularities are very different. To our knowledge, health status of Venezuelan pharmacy students has not been examined.

The goals of this study were to 1) assess the self-reported health status in Venezuelan pharmacy students; and 2) examine the association between self-reported health status and health behaviors in these individuals.

Methods

Design

This article describes an exploratory cross-sectional study. The study method was a survey using a written questionnaire.

Participants

The study population consisted of all undergraduate students enrolled full-time in the School of Pharmacy at the Central University of Venezuela, in Caracas. This is the largest of the three pharmacy schools in Venezuela. The other two schools of pharmacy in Venezuela are a small school in a private university in Caracas and a public school in the city of Mérida. Based on previous studies with the Medical Outcomes Study Health Survey Short-Form 36 (SF-36)

Conflicts of interest: The author has indicated that she has no conflicts of interest with regard to the content of this article.

* *Address correspondence to:* Yajaira M. Bastardo, Universidad Central de Venezuela, Facultad de Farmacia, Apto postal 40109 Nueva Granada, Caracas 1040, Venezuela.

E-mail: yajairabastardo@yahoo.com

1098-3015/$36.00 – see front matter

doi:10.1016/j.jval.2011.05.020

in Venezuela [10], a targeted sample size of 150 was estimated. We assumed a 25% nonresponsive rate. A random sample of 200 students in the School of Pharmacy at the Central University of Venezuela was invited to participate in a study that consisted of completing a written health survey. Participation was voluntary and anonymous. No incentives were given for participation. Consent was assumed if the questionnaire was completed and returned. The survey was completed by 171 students, which represented a response rate of approximately 85.5%.

Measures

A survey instrument was used to assess the variables of interest in this study. The instrument, which was designed to take 10 minutes to complete, included the several scales described below.

Demographics

Demographics examined in this study included age, sex, and income. Age was measured as a continuous variable. Sex was coded as a dummy variable. Income was measured in three categories: less than two times the minimum wage, two to three times the minimum wage, and more than three times the minimum wage.

Reported Health Behaviors

Three health behaviors were investigated in this analysis.

Cigarette Smoking

Cigarette smoking was assessed by asking the participant, "How frequently did you smoke cigarettes during the last 4 weeks?" The response categories were "never," "twice or thrice a month," "once or twice a week," "almost daily," and "daily." Participants were defined as regular smokers if they reported smoking almost daily or daily.

Alcohol Consumption

Alcohol consumption was assessed by asking the participant, "How frequently did you have an alcoholic beverage during the last 4 weeks?" The response categories were "never," "once a month," "twice or thrice a month," "once or twice a week," and "almost daily." Participants were defined as alcohol consumers if they reported having an alcohol beverage during the previous month.

Lack of Regular Exercise

Lack of regular exercise was assessed by asking the participant, "How frequently did you exercise or carried out any sport over the last 4 weeks?" The response categories were "never," "once a month," "twice or thrice a month," "once or twice a week," and "almost daily." Lack of regular exercise was defined as exercising less than once a week during the past month.

Illness

Illness was assessed by asking whether or not the participant was experiencing an illness. Respondents were coded as one if they reported having an illness. They were coded as zero if they answered otherwise. Respondents who reported having an illness were asked an additional question about their illness.

Medicines Use

Medicines use was assessed by asking whether or not the participant was taking medicines. Respondents were coded as one if they reported taking medicines. They were coded as zero if they answered otherwise. Respondents who reported taking medicines were asked an additional question about which medicines they were taking.

Health Status

Health status was assessed using the SF-36 [11]. The SF-36 is a generic health status questionnaire designed to assess eight health domains: physical functioning (10 items), role limitations due to physical (four items) or emotional (three items) health problems, bodily pain (two items), general health perceptions (five items), vitality (energy/fatigue) (four items), social functioning (two items), and mental health (five items). One additional item that is not scored asks respondents to compare current health with that of 1 year ago. The SF-36 is scored by summing item responses after reversing some items to ensure that a higher score always indicates better health-related quality of life. Raw scores are then linearly transformed to a 0 to 100 scale with 0 representing the lowest possible score and 100 the highest possible score [11]. The SF-36 has a high degree of acceptability and data quality. For this study a Spanish version of the SF-36 obtained from the Medical Outcomes Trust developed and validated by International Quality of Life Assessment project was used [12].

Data Analysis

Descriptive statistics are presented for all the variables. Categorical variables are presented as percentages. Range, mean, and standard deviation were computed for continuous variables.

Chi-square was used to map out major differences in male and female students' health behaviors.

The internal consistency of each multi-item SF-36 scale was evaluated using Cronbach's coefficient alpha. According to Nunnally [13], alpha levels between 0.65 and 0.80 are acceptable for group comparisons. A coefficient alpha of 0.70 was set a priori as the goal for all scales of our study. The extent to which SF-36 scores differed in participants grouped by sex was examined.

The association between health status and health behaviors was examined using both bivariate and multivariate models. The bivariate association was examined by *t* tests. To determine which variables were associated with different concepts of health status controlling for other variables in the model, multiple regression analysis was used to model each SF-36 score separately using as independent variables sex, lack of regular exercise, regular smoking, and alcohol consumption.

All data analyses were performed using SSPS for Windows version 10.0 (1999, SPSS Inc., Chicago, IL). A priori, for all tests the significance level was set at $P \leq 0.05$.

Results

Description of the Sample

The sample consisted of 127 women and 44 men. The sample had a mean age of 22.3 $\pm$ 2.71 years, (range 18–35 years). The mean age did not differ among the men and women (*t* test $t = 1.67$; $P = 0.097$). The sample had relatively high income: 47.8% reported an income more than three times the minimum wage, 23.9% reported an income between two to three times the minimum wage, and 28.3% reported an income less than two times the minimum wage. As expected, the sample was healthy; only 30 subjects (17.5%) reported having an illness. Forty subjects (23.4%) reported current medication use; of those, 11 (27.5%) were taking oral contraceptives and eight (20%) were taking vitamins.

Health Behaviors

Of the students surveyed, 113 (66.1%) had at least one drink in the previous month, 106 (62%) did not exercise regularly, and 18

(10.5%) smoked regularly during the last month. There were differences in certain health behaviors between genders. Male students were more likely to consume alcohol (84.1% vs. 59.8%; chi-square 19.568; $P = 0.001$) and to exercise regularly (65.9% vs. 28.3%; chi-square 8.573; $P = 0.002$) than female students. There was no difference in smoking behavior (13.6% vs. 9.4%; chi-square 0.608; $P = 0.301$) between male and female students.

Health Status

The internal consistency reliability of the SF-36 was high. The Cronbach's alpha coefficients ranged from 0.72-0.89. Means of each SF-36 score grouped by sex and health behaviors are shown in Tables 1 and 2 in Supplemental Materials found at: doi:10.1016/j.jval.2011.05.020.

Bivariate Analysis

In bivariate analyses, sex was significantly associated with all SF-36 domains. Lack of regular exercise was significantly negatively associated with physical functioning, vitality, and mental health. Regular smoking was significantly negatively associated with physical functioning and general health. Alcohol consumption was significantly positively associated with role-physical, bodily pain, vitality, and social functioning.

Multiple Regression Analysis

Multiple regression analysis was used to model each SF-36 score separately using as independent variables sex, lack of regular exercise, regular smoking, and alcohol consumption. Table 3 in Supplemental Materials found at: doi:10.1016/j.jval.2011.05.020 shows the β coefficients obtained for each independent variable and the adjusted R^2 values obtained for each regression model, which is a measure of the proportion of variance of the dependent variable accounted for by the regression model. Except role-emotional, all the models were significant (F values from 3.51–6.71). The regression models explained between 6% and 12% of the variance in the different SF-36 domains. Controlling for other variables in the model, male students had significantly higher scores in bodily pain, general health, vitality, and social functioning than female students. Controlling for other variables in the model, lack of regular exercise was associated with significantly lower scores in physical functioning, bodily pain, and vitality; and regular smoking with significantly lower scores in physical functioning and general health. Controlling for other variables in the model, students who reported consuming alcohol had significantly higher scores in role-physical, bodily pain, and social functioning than students who did not report to consuming alcohol.

Discussion

The aim of this study was to describe health status of Venezuelan pharmacy students, and to examine the association between health behaviors and health status in this population.

Alhough the measure of lack of regular exercise used herein is slightly different in term of time frame from other studies, our results are comparable to those reported previously by Steptoe and Wardle [6] for university students in Western Europe and Martins Bion et al. [14] in Brazil. As found in previous studies, male students were more likely to exercise regularly than female students in our sample [8,15]. Drinking and smoking behaviors found in this study do not agree with findings from other studies. The students in our sample tended to report lower levels of drinking (66.1%) and smoking (10.5%) than university students in Europe [6,8] and the United States [7]. Compared to other studies in South America, the alcohol use in our sample was very similar to that reported by Passos et al. [16] for medical students in four public universities in Rio de Janeiro and lower than reported by Pillon et al. [17] for first-year university students in Brazil. As found in other studies [8,16,17], male students were more frequent drinkers than female students. Tobacco consumption in our sample was considerably lower than reported in other studies in South America [18,19]. Contrary to other studies [8], there was not a difference in smoking behavior between male and female students in our sample.

The overall health status of pharmacy students in Venezuela was good. In the bivariate analysis, for all health concepts, male students scored significantly higher than female students. Even controlling for other variables in the model, male students had significantly higher scores in bodily pain, general health, vitality, and social functioning than female students. These findings agree with previous literature showing sex differences in health status [2,8]. The data from this exploratory study do not shed light on the factors that may contribute to female students' lower ratings in self-reported health, but warrant further investigation to explain why, even in a relatively privileged group of the society, sex differences of such magnitude persist.

Representatives from both sexes scored higher in health concepts closely related with physical health, which was expected in this relatively young sample. The scores in vitality and mental health were considerably low, which suggest some burnout in our sample that should be further investigated. University students are under the influence of several stressors with unknown consequences to their health [8]. In one study that examined stress in health professions students, pharmacy students were found to have more stress and distress than medical and dental students [20]. This exploratory study has identified an important health issue that requires attention from the Student Well-Being Center and deserves consideration by health professionals who provide care to this population. The health of the students must be an important public health concern for the society. Because of this, it is important to understand better the relation of self-reported health status and health behaviors in Venezuelan university students to ensure health promotion strategies well aligned to their needs.

In addition, we found significant associations between some health concepts and health behaviors in bivariate and multivariate models. Not surprisingly, in both models, regular exercise was positively associated with physical functioning and vitality. As expected, regular smoking was negatively associated with physical functioning and general health. Surprisingly, some SF-36 health concepts were significantly positively associated with alcohol consumption. These findings suggest an optimism bias in our sample. In addition, alcohol consumption was associated with sex, which could confound the results in our sample.

There are limitations of this study that should be considered when evaluating the results. First, the study used a random sample of pharmacy students attending the Central University of Venezuela in Caracas. Thus, the results of this study may not be generalized to pharmacy students from the other two universities in Venezuela that offer a pharmacy program. Second, although the study showed significant associations between health status and some health behaviors studied, its cross-sectional design does not allow us to draw conclusions regarding the direction of the relationships or causality. For example, we do not know if regular smokers in this sample truly have poorer health or if they rate their health poorer because they are aware that smoking is a bad health habit that could affect their health. Despite these limitations, this exploratory study is the first in Venezuela that used the SF-36 in examining health status in a relatively young and healthy Venezuelan population.

Conclusions

This exploratory study demonstrates sex differences in health behaviors and perceived health status in pharmacy students. Health status is associated with several health behaviors in this sample of pharmacy students.

Supplemental Materials

Supplemental material accompanying this article can be found in the online version as a hyperlink at doi:10.1016/j.jval.2011.05.020, or if hard copy of article, at www.valueinhealthjournal.com/issues (select volume, issue, and article).

REFERENCES

[1] Idler EL. Age differences in self-assessment of health: age changes, cohort differences, or survivorship? J Gerontol 1993;48:S289–300.
[2] Dunn JR, Walker JD, Graham J, et al. Gender differences in the relationship between housing, socioeconomic status, and self-reported health status. Rev Environ Health 2004;19:177–95.
[3] Hemingway H, Nicholson A, Stafford M, et al. The impact of socioeconomic status on health functioning as assessed by the SF-36 questionnaire: the Whitehall II Study. Am J Public Health 1997;87:1484–90.
[4] Damian J, Ruigomez A, Pastor V, Martin-Moreno JM. Determinants of self assessed health among Spanish older people living at home. J Epidemiol Comm Health 1999;53:412–16.
[5] Mossey JM, Shapiro E. Self-rated health: a predictor of mortality among the elderly. Am J Public Health 1982;72:800–8.
[6] Steptoe A, Wardle J. Health behaviour, risk awareness and emotional well-being in students from Eastern Europe and Western Europe. Soc Sci Med 2001;53:1621–30.
[7] Prokhorov AV, Warneke C, de Moor C, et al. Self-reported health status, health vulnerability, and smoking behavior in college students: Implications for intervention. Nicotine Tob Res 2003;5:545–52.
[8] Vaez M, Laflamme L. Health Behaviors, self-rated health and quality of life at university: a study among Swedish first-year university students. J Am Coll Health 2003;51:156–62.
[9] Saupe R, Nietche EA, Cestari ME, et al. Qualidade de vida dos acadêmicos de enfermagem. Rev Latino-am Enfermagem 2004;12: 636–42.
[10] Bastardo YM, Kimberlin CL. Relationship between quality of life and social support in HIV-infected persons in Venezuela. AIDS Care 2000; 12:673–84.
[11] Ware JE, Snow KK, Kosinski M, et al. SF-36 Health Survey. Manual & Interpretation Guide. Boston: New England Medical Center Health Institute, 1993.
[12] Alonso J, Prieto L, Antó JM. La versión española del SF-36 Health Survey (Cuestionario de Salud SF-36): Un instrumento para la medida de los resultados clínicos [The Spanish version of the SF-36 Health Survey (the SF-36 health questionnaire): an instrument for measuring clinical results]. Med Clín (Barcelona) 1995;104:771–6.
[13] Nunnally JC. Psychometric Theory (2nd ed.). New York: McGraw-Hill, 1978.
[14] Martins Bion F, de Castro Chagas MH, de Santana Muniz G, et al. Estado nutricional, medidas antropométricas, nivel socioeconómico y actividad física en universitarios brasileños [Nutritional status, anthropometrical measurements, socio-economic status, and physical activity in Brazilian university students]. Nutr Hosp 2008; 23:234–41.
[15] Dos Santos Ferreira da Silva G, Bergamaschine R, Rosa M, et al. Avaliação do nível de atividade física de estudantes de graduação das áreas saúde/biológica [Evaluation of the level of physical activity of graduate students of health/biological areas]. Rev Bras Med Esporte 2007:13:39–42.
[16] Passos S. Brasil P, Santos M, Aquino MT. Prevalence of psychoactive drug use among medical students in Rio de Janeiro. Soc Psychiatry Epidemiol 2006;41:989–96.
[17] Pillon S, O'Brein B, Chavez K. The relationship between drug use and risk behaviors in Brazilian university students. Rev Latino-am Enfermagem 2005;13(Spec):1169–76.
[18] Prat-Marin A, Fuentes-Almendras MM, Sanz-Gallen R, et al. Epidemiología del tabaquismo en los estudiantes de ciencias de la salud [Epidemiology of tobacco use in health-science students]. Rev Saude Publica 1994:28:100–6.
[19] Danjoy León D, Ferreira P, Pillon SC. Conocimientos y prácticas sobre el consumo de tabaco en estudiantes de pregrado de farmacia, Lima, Perú [Knowledge and practice regarding tobacco use among pharmacy undergraduate students in Lima, Peru]. Rev Latino-am Enfermagem 2010;18(Spec):582–8.
[20] Henning K, Ey S, Shaw D. Perfectionism, the imposter phenomenon and psychological adjustment in medical, dental, nursing, and pharmacy students. Med Educ 1998;32:456–64.